a man, he again made a dog the subject of experiment; and after he had tied the pylorus, about three ounces of a mixture of tincture of rhubarb with water were at intervals injected into his stomach. Upon killing this dog, at the expiration of eight hours and a half, his bladder was found distended with urine highly tinctured with the rhubarb. The spleen was turgid; and, when cut through and examined by a magnifying-glass, appeared to consist of two parts intermixed, but very distinguishable from each other by their colour; the one was transparent, in the form of small circles or ovals, and surrounded by a different structure, which was vascular, of a red colour, but of a lighter hue than the substance of the liver.

This spleen was immersed in water, and being cut into small pieces, the water became discernibly impregnated with the rhubarb, as was rendered manifest by the test of alkali.

On the contrary, an equal portion of the liver of the same dog, treated in the same way, gave no such colour to the water, but only tinged it with blood of a red colour. Although fluids are thus found to pass from the stomach to the spleen, the vessels by which they are conveyed have not been detected, nor does Mr. Home entertain much hope of such a discovery.

On the Composition of the Compound Sulphuret from Huel Boys, and an Account of its Crystals. By James Smithson, *Esq. F.R.S.* Read January 28, 1808. [*Phil. Trans.* 1808, *p.* 55.]

Mr. Smithson gives a particular description of the form of the sulphuret of lead, antimony, and copper, because that which was laid before the Society in 1804 appeared to him materially inaccurate and imperfect; and he further offers some observations upon Mr. Hatchett's experiments, which he deems essentially necessary to our rightly understanding this substance, as well as many other chemical compounds to which the same principles extend.

The author conceives it not to be probable that this ore is a direct quadruple combination of the three metals, lead, antimony, and copper, with sulphur; but thinks it much more credible that it consists of the three sulphurets of these metals.

On this presumption he makes experiments, to determine the proportion of these sulphurets to each other; and since 10 grains of galena produce $12\frac{1}{2}$ sulphate of lead, he thence infers the quantity of galena indicated by 60·19 grains of sulphate of lead, obtained by Mr. Hatchett. So also with respect to sulphate of antimony;—as 10 grains yield 11 of precipitate from muriatic acid by water, he is enabled to determine the quantity of sulphuret of antimony, corresponding to Mr. Hatchett's precipitate of 28·64 grains. With respect to sulphate of copper, his method is not so direct; for as he had none of this sulphuret on which to make experiments, he only presumes that the remainder of the ore consists of this compound; and hence he obtains the following results: sulphuret of lead, 49·7; sulphuret of antimony, 29·6; sulphuret of copper, 20·7.

From the near agreement of these numbers with the simple pro-

portions of 50, 30, and 20, he thinks it no great violation of probability, to suppose that experiments affected with no error would, in fact, have given these integral results instead of the former decimal parts.

Mr. Smithson proceeds further to express his doubts, not only of the existence of quadruple, but even of strictly triple compounds. He believes that all combination whatever is binary, and is inclined to consider the present compound as consisting of equal parts of galena and fahlertz; the latter being also a binary compound of the sulphurets of antimony and of copper, in the proportion of three of the former to two of the latter.

The author next computes the proportion of the four ultimate elements; and these, being deduced from assumed simple fractions, are simply as the numbers 12, 25, 15, and 8. These, he remarks, are sexagesimal parts of this ore, as were those also which in a former paper he assigned to calamine.

When in that communication he offered a system founded on the results of his own experiments, he is apprehensive that he may have been supposed to be influenced, even unconsciously to himself, by a favourite theory; but the present case he thinks not liable to the same objection, since no fondness for theory affected the experiments of Mr. Hatchett, which nevertheless accord with its principles when viewed in a proper light.

Mr. Smithson, conceiving it established that chemical compounds consist of elements united in simple proportions by weight, observes, that greater accuracy is to be expected from correct theory than can be obtained in chemical experiments.

The principles of his theory require that simple ratios should always obtain in binary compounds; and he gives instances from the subjects of the foregoing experiments, which any chemist can, by careful repetition, confirm.

The ratios which he assigns to the compounds of lead are such, that two parts of lead make three of sulphate of lead, and five of lead make six of sulphate of lead. So also five of antimony make six of sulphuret, and three of antimony make four of powder of algaroth.

From the only crystalline form which Mr. Smithson believes to exist of the triple sulphuret, he infers that its primitive form is a cube, and not a tetrahedral prism, as stated by Count Bournon; and he observes, that the angles given by the Count are at variance with each other.

On Oxalic Acid. *By* Thomas Thomson, *M.D. F.R.S. Ed.* *Communicated by* Charles Hatchett, *Esq. F.R.S.* Read January 14, 1808. [*Phil. Trans.* 1808, *p.* 63.]

Though much important information has resulted respecting the *formation* of this acid, from the experiments of Hermbstadt, Westrumb, Berthollet, Fourcroy, and Vauquelin, the *properties* of it have been rather neglected since the original dissertation of Bergman, to whom